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AUTHOR Roloff, Michael E.
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ABSTRACT

An important area for communication researchers has been the relationship between persuasive messages and their impact on attitudes, beliefs, and behavior. A model is presented to clarify the relationship between persuasive messages and attitudes. In an effort to establish the validity of the model, six hypotheses are set forth concerning the relationship in question. Three of the six hypotheses derived from the model are confirmed, providing some support for the research utility of the model. It is concluded that the model has some utility and accuracy, but more research is needed. The nature of the direction the research should take is outlined. (The results of this study are presented in table, graph, and narrative format.) (RB)

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AN EMPIRICAL INVESTIGATION OF A BELIEF COMPARISON CHANGE MODEL

By

Michael E. Roloff
Department of Human Communication
University of Kentucky

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INTRODUCTION

An important area for communication researchers has been the relationship between persuasive messages and their impact on attitudes, beliefs and behavior. While the research in the area has been extensive, parsimonious and consistent explanations of well studied phenomena have been limited. For example, a great deal of research has been conducted investigating the relationship between the amount of attitude change advocated and the amount of attitude change obtained. Despite the development of four theoretical perspectives (cognitive dissonance theory, social judgment approach, group norm theory and linear force aggregation theory) conflicting results remain. Roloff (1974) reported the extent of the conflicting results that have plagued researchers in this area. Of 31 studies reviewed, 15 found positive linear relationships, 9 found curvilinear relationships and 7 found negative linear relationships.

A solution to this confusion might be found by investigating a new model which addresses three problem areas not dealt with by previous models. Previous models have largely ignored the totality of a person's attitude or belief about an object. Previous models have largely ignored the influence of a person's past on attitude change. Previous models have largely lacked clear specifications of relationships between the amount of change advocated and the amount of change obtained.

First, the previous models have only focused on parts of an individual's attitudes or beliefs. Two major operationalizations have been used when investigating the relationship between advocated and obtained change. Some researchers focused on questions which ask the subjects to indicate what they felt an object should be. For example, Bochner and Insko (1966)

operating out of a cognitive dissonance framework asked subjects, "For maximum health and well being how many hours of sleep per night do you think the average young adult should get?" Similarly, Whittaker (1965) operating out of the social judgment approach addressed issues ranging from "The President should have power to reduce tariffs" to "No foreign aid should be given to Communist governments." On the other hand, some researchers have investigated questions which require a subject to make judgments about what the object is. For example, Fisher and Lubin (1958) were interested in the effect of group communications on an individual's response to the number of paratroopers shown on a slide. Subjects were asked to write down the number of paratroopers that were shown on a slide; then they received a communication by group members about how many paratroopers were shown. After the communication, subjects were again asked to estimate the number of paratroopers shown on the slide. In this case, subjects were asked to make statements about how many things they thought were actually shown on a slide rather than the number that should be shown. Insko, Murashima and Saiyadain (1966) also operating from cognitive dissonance asked subjects to indicate how many figures were shown on a poster. In this case, they were asked to make judgments of how many figures were shown rather than how many should be shown.

Better operationalizations are possible by borrowing from both positions. Instead of looking at an attitude or belief or simply a decision as to what an object is or should be, it may be more heuristic to think of an attitude or belief comparison which is defined as an evaluative construct consisting of the difference between what the object is and what it should be.

This approach would provide us with several advantages. First, it would give us a baseline to compare how a person might orient toward an object. We constantly seem to be comparing objects on some dimension. For example, we compare our car's gasoline consumption on the basis of what we

think it should get and what it actually gets. We have a ready made continuum which allows us to array our car and other cars and make decisions about whether to exchange or keep our car.

Second, by comparing an object in terms of what it should be with what it is, we can also improve our measurement scales. Torgerson (1958) argues that we should attempt to form scales that allow us tc measure distances between concepts. While the operationalization advocated here is not as sophisticated as some techniques suggested by Torgerson, it does provide us with a rough distance measure.

This operationalization is not new. Duval and Wicklund (1972) argue for the position that one becomes aware of oneself by comparing what one should be (ideal self) with what one actually is (real self). Their paradigm does not take into consideration how one evaluates or becomes aware of other objects.

Thibaut and Kelley (1959) posit a paradigm that allows one to evaluate a relationship in terms of a comparison level. One compares the desired outcomes with what the outcomes actually are.

A second problem that existing models have ignored is the development of an individual's attitude or belief. The existing models (with the exception of linear force aggregation) have seemingly ignored the role of communication or direct experience in the acquistion of attitudes. These concepts are important since they might tell us something about how resistant an attitude or belief will be to change.

The closest researchers have come to these developmental variables is the construct of ego involvement. Unfortunately this construct has not been very useful. Wilmot (1971) found several different measures of ego involvement to be only weakly related to attitude change.

Roloff (1974) using linear force aggregation investigated the influence of inertial mass. The influence of inertial mass was found to be significant

in only one of three attitudes investigated. Since inertial mass measures the amount of communcation interaction the person has had about an object, it ignores the person's direct experience with the object. It may be that mass alone is not sufficient to determine resistance to change.

The final problem with existing models is that there has been an unclear specification of the relationship between the amount of change advocated and the amount of change obtained. Roloff (1974) pointed out the ambiguity in the predictions made by group norm theory. Further, upon examining the original specifications of all the theories and the subsequent research, we were left somewhat confused as to the predictions.

This paper presents a model that will hopefully provide some clarity in this area.

This model is based around the following seven propositions:

1. The self-conception is the composite of the information an individual has about his relationship to the objects of his experience.

2. The self-conception is a socially developed process.

3. The self-conception is directly causative of conscious human behavior.

4. Belief comparison change is the process by which a source attempts to modify a receiver's conception of his (receiver's) relationship to an object by symbolically presenting his (source's) conception of the receiver's relationship to an object.

5. The mass of messages that a person has received about an object acts as a resistor to belief comparison change.

6. The number of experiences a person has had with an object acts as a resistor to belief comparison change.

7. The mass of messages proposing a given amount of change acts as an impetus for belief comparison change.

The development of this model will take place in two stages: first, the propositions will be explicated and second, hypotheses will be derived from the propositions.

PROPOSITION 1: The self-conception is the composite of information an individual has about his relationship to objects of his experience.

The self-conception is a process by which an individual identifies himself. Symbolic interactionists have argued that humans, unlike animals, have some part of their beings which allows them to guide their behavior along the lines of the groups to which they belong. That is, they have some notion of who they are and how they should behave that conforms to some degree to the expectations of the community of which they are part. When a person has a conception of who he is, he has taken the role of others and viewed his behavior. His ability to view his own behavior as others do allows him to identify who he is. He can compare his behavior to others and see how closely he conforms to the group norm or how far he deviates from it.

Identification implies that the individual observes himself in relation to objects. An individual is only able to gather information about himself through a process of defining his relationships to objects. When a person defines his relationship, he places himself in a proposition with a different term.

In the process of observing himself behave toward some object, the person notes how he acts and makes inferences from his actions about his relationship with the object. This inference is a comparison of how the object should behave and how the object does behave. That is, the person compares the notion of what the object ideally should be with what the object actually is. By comparing the two notions the person can evaluate the object by examining the distance between what the object should be and what the object is. By comparing all objects along this continuum he can determine what the objects are and how he can behave toward them. In essence, the person knows who he is and has developed a self-conception.

PROPOSITION 2: The self-conception is a socially developed process.

In discussing the self, Mead indicates that it is a developmental process; it is not present at birth:

> The self is something which has a development; it is not initially there at birth, but arises in the process of social experience and activity, that is, develops in the given individual as a result of his relations to that process as a whole and to other individuals within that process.[1]

According to Mead, this process develops along three stages. The first stage is the play stage. In the play stage the individual has a rather hazy picture of objects in his environment. The individual is able to play the role of any of these objects but is unable to determine the relationships existing between them.

Second is the game stage. At this point the individual has formed an adequate definition of others in his environment and has begun to learn the rules which guide their relationship to each other.

From the game stage arises the generalized other. The organized community to which an individual belongs provides the individual with a set of generalized attitudes from which the individual may react to himself and other objects in his environment. The individual may take the community's attitude toward himself and toward the activity in which they are engaged. By doing this, he can anticipate their actions toward objects in the environment and guide his behavior appropriately. This process allows the individual to develop a complete self. He can understand his own behavior in terms of its conformity or deviation from group norms.

These stages can be interpreted in terms of the amount of communication and/or experience a person has about an object. At the play stage, a person would have small amount of experience with an object and small amounts of communication about an object. For example, when a person enters a new job, he has some idea about the role which he is to take but very little

idea of how it will relate to objects. The person will have only minimal notions of how he should relate to objects. He can perform with them to a degree, but cannot fully critique how he or they should behave.

At the game stage the person has had a large amount of experience with objects but only a moderate amount of communication about them. At this stage the person fully understands what the object is but has not fully developed his notion of what the object should be. He is uncertain how he or the object should behave.

At the level of the generalized other the person has had a large amount of experience with the object and a large amount of communication about the object. At this point the person knows what the object is and what the object should be. The person can critique his own behavior toward the object and its behavior toward him.

Thus, a person develops his self-concept through stages which vary in the number of experiences he has had with objects and the amount of communication he has had about objects.

PROPOSITION 3: The self-conception is directly causative of conscious human behavior.

This proposition is developed in two stages. First, the self-concept is a necessary condition for conscious human behavior. When a person confronts an object, the person must be able to identify it and differentiate it from the other objects in the environment. If one lacks this information he lacks the ability to behave toward the object. This information consists of knowledge about how the object should act and how the object is acting. By making that comparison the person can make an estimate of what the object is and the appropriate behavior.

Second, the self-concept is a sufficient condition for conscious human behavior. When a person reflects about an object, the person not only gathers information about how the object should act but also how

he should act toward it. By making a comparison between how he reacted toward the object in the past and how he is reacting now the person can make judgments about how to behave toward the object.

This position suggests that if we want to predict a person's behavior from his perception of the distance between what the object should be and what the object is, we might adopt a paradigm similar to Thibaut and Kelley's. They argue that we can determine whether a person will continue a pattern of behavior on the basis of the difference between the desired outcomes and the real outcomes, and the desired outcomes and real outcomes that could have been obtained through alternate actions. If we adopt this viewpoint, we may argue that a person will behave in a given manner depending upon available alternatives. For example, a person may keep a car that uses more gas than he would like if he cannot obtain a car that does any better. Further, if the new car would cost more money than he would like to pay, the person may also stay with the older car.

Thus, it is possible to view a distance model as having an affect on a person's behavior as well as beliefs.

PROPOSITION 4: Belief comparison change is the process by which a source attempts to modify a receiver's conception of his (receiver's) relationship to an object by symbolically presenting his (source) conception of the receiver's relationship to an object.

The development of this proposition will occur in two parts: conceptual and operational definitions of important variables, and an overall description of how the proposition will work.

There are four important definitions: belief comparison, object, belief comparison change and persuasive message.

A belief comparison involves a comparison between what the object should be and what the object is. In other words, a comparison between

two beliefs. A belief is defined by Mead to be a single self-object relationship, or more specifically, a person's conception of his relationship to an object or class of objects.

An object is anything that can be designated or referred to. In essence an object can be differentiated from other stimuli in a person's environment and can be referred to symbolically. Operationally, objects refer to such things as roles (doctor, student, professor, etc.), persons (President Ford, Ralph Nader, Fidel Castro, etc.), behaviors (sleeping, talking, running, etc.), inanimate objects (rocks, machines, space, etc.), or animate ones (people, plants, animals, etc.).

Belief comparison change is the process by which I attempt to modify your conception of your relationship to an object by symbolically presenting you with my conception of your relationship to an object. Operationally, this involves the expansion or contraction of the difference you perceive between what an object should be and what the object is.

For example, a person may believe that a good car should get 20 miles to the gallon. However, the person's car only gets 10 miles to the gallon in city driving. As a result when the person compares the should with the is, he finds that his car gets 10 miles to the gallon less than he would like to see it get. After comparing his car's usage with government comparisons in highway driving, he finds that his car does better when it is used for long distance driving. Thus, he decides only to use his car for longer trips rather than hectic city driving. Also, he reads the Federal Government's level for what a car should be getting and finds that his expectations are too high. As a result he finds that his car is actually getting 15 miles to the gallon on the highway and he should only be expecting it to get 18 miles to the gallon. His comparison between what the car should be getting and what it is

getting has changed from a 10 mile deficit to only a 3 mile one. In other words, the belief comparison change is -7 over the two time periods which means the distance between should and is has contracted or become closer. As a result, the person may decide that his car is better than he thought and may decide to keep the car instead of trading it in.

The opposite case may be also true. A person may believe that his car should be getting 15 miles per gallon and that it is getting 20 miles per gallon. In this case the distance between should and is encompasses a 5 mile bonus per gallon. However, after reading government reports on auto gas mileage the person discovers that he has been inaccurately recording gas mileage and that he has been expecting too little from his car. As a result, he finds that his car should be getting 20 miles per gallon and is only getting 15. Now the distance is perceived as a deficit. The distance between should and is has expanded. On this basis, the person may decide to get rid of the car.

The major means of belief comparison change is through a persuasive message. A persuasive message is defined as a symbolic statement in which I implicitly or explicitly indicate my conception of the relationship between a person and an object or class of objects. When I say a symbolic statement I am referring to symbol in the sense that Mead did:

> Symbols stand for the meanings of those things or objects which have meanings; they are given portions of experience not directly present or given at the time when, and in the situation in which, any one of them is thus present (or is immediately experienced).[2]

In essence, Mead is differentiating a symbol from a sign. If one thinks of a sign as standing for something else because it is present at about the same time and place as the "something else" (e.g., smiling when happy), then a symbol is distinguished from a sign since a symbol stands for something else because its users have agreed to let it stand for something else (e.g., the word, "happy").

A persuasive message includes implicitly or explicitly a statement of a relationship i.e., I give you a statement of a belief comparison, as defined above. In these cases the belief comparison is made by taking the difference between what the receiver of the message believes the object should be and what the message says the object is or what the person believes the object is and what the message says the object should be.

Using this comparison model, I argue that there are six kinds of comparisons possible as a result of a given persuasive message:

1. Between what I say the object is and what you believe the object is. In this case, the comparison is made between the message reality statement and the receiver's reality statement.

2. Between what you believe an object should be and what I say the object is. In this case, you may have a weakly-defined notion of what the object is but well-defined notions of what the object should be.

3. Between what I say the object should be and what you believe the object is. In this case you may have a weakly-developed notion of what the object should be and well-defined notions of what the object is.

4. Between my notion of what the object should be with your notion of what the object should be. In this case, your primary orientation is toward the ideal definitions of the object.

5. Between what I say the object should be and what I say the object is. In this case, you may have no idea as to the real or ideal states of the object and totally accept mine.

6. Between your belief comparison and the one I present in my message. In this case you look at the total belief comparisons instead of the parts. In other words, my should - is with your should - is.

Any of these six comparisons results in some change in the belief comparison. By comparing any part of the belief comparison or the entire belief comparison with the message the person can see the discrepancy between his position and the message. This discrepancy will result in some amount of belief comparison change.

PROPOSITION 5: The mass of messages that a person has received about an object acts as a resistor to belief comparison change.

The fifth proposition indicates that the mass of messages that a person has received about an object acts as a resistor to belief change. The development of this proposition occurs in three stages. First, the person's mass of messages about an object is a determinant of what the person believes an object should be and what the object is. When a person communicates with others he shares experiences with objects. As each person provides information about the performance of an object the others tend to get some notion of the range of variability of the object and how well it functions. These facts tell the individual how the object will behave and ideally how it should behave. It represents symbolic representations of how the object has operated for others and how the object should ideally function for all.

Second, the mass of messages creates certainty within the individual that his conception of what the object should be is correct. That is, the more a person hears of the performance of the object the more he is likely to believe that the object should behave in a given fashion. The others' consensus of the operation of the object will increase his belief in his conception of what the object should be.

Third, certainty about what the object should be causes resitance to positions contrary to those of the individual. That is, the more certain I am of my conception of what the object is and should be, the more critical I will be of messages indicating a different conception of what the object is and should be. Since belief comparison change involves a comparison of the person's belief comparison with a message statement of belief comparison, we would expect the mass of messages to increase resistance to belief change.

PROPOSITION 6: The number of direct experiences a person has had with an object acts as a resistor to belief change.

The sixth proposition argues that the number of experiences a person has had with an object acts as a resistor to change. There are three aspects of this proposition. First, self-reflection about experiences with an object is the primary determinant of an individual's conception of what the object is. When a person observes an object, he gathers information that tells him what an object is and how it will behave. This is not to say that part of the information about what an individual believes an object is cannot be developed through communication. It is simply saying that observing one's experiences with the object over time will tend to give a more exact picture of what the object is than would communication. Instead of symbolically describing an object, one can experience it directly.

Second, experience with an object increases the individual's certainty that his belief of what the object is will be correct. That is, as the individual observes an object over time he begins to see similarities in the object's composition and behavior. He will then generalize these experiences with objects and will tend to believe that he has accurately described what the object is.

Third, certainty about what the object is causes resistance to positions contrary to that of the individual. That is, when I become certain that my position on what the object is, is correct then I will begin to resist attempts to move me from that position. I will become critical of positions that argue that the object is different than I believe it is. Since my conception of what the object is remains stable my beliefs are harder to change.

PROPOSITION 7: The mass of messages proposing a given amount of change acts as an impetus to belief comparison change.

The seventh proposition argues that the number of messages advocating a given change acts as an impetus to change. This proposition develops in three stages. First, messages are the most direct method of attaining belief change. Essentially, when one communicates with another, one directly argues the position advocated. There tends to be interaction about a given topic with both parties being conscious of the issues. The counterpart to communication would be that of experience. Getting someone to have new experiences and allowing them to come to new conclusions about their beliefs is an indirect way of changing beliefs. It means somehow arranging a person's interaction with an object to be different and the conclusion reached to be the desired one. It is more difficult to attain such a situation. Thus, communication is the most direct way to attain belief change.

Second, the mass of messages a person receives about an object increases the uncertainty of the individual that his conception of his relationship to the object is correct. When a person begins to receive a number of contrary messages about an object, he perceives that others' consensus about the object is different from his own. This consensus indicates to him that his position is incorrect.

Third, uncertainty about his position increases the impact of the message on the individual's belief. The individual feels uncertainty because others' messages indicate his conception of the object is different. In order to reduce uncertainty the individual begins to change his beliefs to be more in line with others' messages.

Figure 1 indicates what the model looks like.

Figure 1. -- A Belief Comparison Change Model

BELIEF COMPARISON CHANGE BETWEEN T_1 and T_2

Receiver's "should"
- Receiver's "is"

Belief Comparison Time 1

Receiver's "should"
- Receiver's "is"

Belief Comparison Time 2

MESSAGE COMPARISONS BETWEEN T_1 and T_2

1) Message "is"
   - Receiver's "is"

2) Receiver's "should"
   - Message "is"

3) Message "should"
   - Receiver's "is"

4) Message "should"
   - Receiver's "should"

5) Message "should"
   - Message "is"

6) Message Belief Comparison
   - Receiver's Belief Comparison

Belief Comparison Time 2
- Belief Comparison Time 1

Belief Comparison Change

Hypotheses

In the model I argue that a person tends to develop his definition of what an object "is" at an earlier point in time than his definition of what an object "should be". This is consistent with symbolic interaction since Mead argues that a person develops his self-conception through two stages (play and game) in which the person learns how to perform in a role. These stages are initially practice stages which provide definitions of how something is done or what something is. In a later time period (when the generalized other is developing) the person is able to critique how something ideally should be done or what something ideally should be.

Because a person's notion of "should" forms later, when one deals with predictions involving changes in a person's conception of should, one can find belief change at all levels of advocacy. In other words, a prediction of positive linear relationships are made when dealing with predictions involving person's "should be" conception and message "should be" conception:

1. There is a positive linear relationship between message comparison #3 (difference between message "should" and receiver's "is") and belief comparison change.

2. There is a positive linear relationship between message comparison #4 (difference between message "should" and receiver's "should") and belief comparison change.

3. There is a positive linear relationship between message comparison #5 (difference between message "should" and message "is") and belief comparison change.

4. There is a positive linear relationship between message comparison #6 (difference between message definition of comparison and receiver's definition of comparison) and belief comparison change.

Since people tend to develop some notion of what an object is at an early stage, we would expect that their notion of what an object is will be harder to change. Thus, the model would predict that large changes in belief comparisons will be less possible as one advocates positions

beyond a person's experiences or notions of what the object is. In other words, the model predicts nonlinear (inverted U) relationships in comparisons involving the person's conception of what an object is even if the person accepts the message "is". The model makes two predictions of nonlinearity:

5. There is a nonlinear relationship (inverted U) between the message comparison #1 (difference between message "is" and the receiver's "is") and belief comparison change.

6. There is a nonlinear relationship (inverted U) between the message comparison #2 (difference between receiver's "should" and message "is") and belief comparison change.

The study methods follow.

METHODOLOGY

Definitions

This section will develop conceptual and operational definitions of three key variables in the belief comparison change model: (1) belief comparison, (2) belief comparison change, and (3) message comparison.

Belief comparison is defined as an evaluative process in which a person compares his belief about an object's ideal state with his belief about an object's real state. In other words, a belief comparison is defined by the difference between what an individual thinks an object should be and what an object is.

In the present study, 12 topics were used to gather information about a person's beliefs. All were issues on which the individual was believed to have little realistic information. Individuals were asked to indicate their beliefs toward twelve topics by responses to the following questions:

1. How long is the average prison sentence for a rape conviction in the U.S? (How long should it be?)

2. What amount of money is spent each year on the upkeep of our national forests and parks by the federal government? (What amount should be spent?)

3. How much life insurance does the average American family have for the "head of the family"? (How much should he have?)

4. What do you think is the current size of the U.S. Army? (What size should it be?)

5. On the average weekday, how long does a 9-11 year old child watch television? (How long should a child watch?)

6. How much time per week do you think the average Michigan State University student gives to volunteer activities? (How long should a student give?)

7. How much is spent by the federal government each year for cancer research? (How much should they spend?)

8. What size weekly allowance do you think the average high school senior gets? (How much should a senior get?)

9. What do you think is the average class size at Michigan State University? (What size should it be?)

10. Each week on the networks, how many hours of children's television are there not counting cartoons? (How many should there be?)

11. How much do you think the average family donates to charity each year? (How much should a family donate?)

12. How many hours a week are given by local broadcasters to anti-drug public service announcements? (How many hours should be given?)

Each question was followed by numbered intervals from which the subject could check the response most representative of his belief. All questions were pre-tested with 58 students from two sections of a basic undergraduate communication course at Michigan State University. From these student responses, intervals were constructed for each question. The questions were left open ended with a response category of "no idea" provided. The pre-test means for each question follow:

Topic	Mean	Frequency of "no idea"
Rape "is"	7.8 years	16
"should"	18.5 years	10
Parks "is"	$26,925,270	51
"should"	$36,914,540	41
Life Insurance "is"	$34,809	36
"should"	$43,700	39
Army Size "is"	2,921,774 soldiers	48
"should"	1,129,285 soldiers	34
Child TV Viewing "is"	8.4 hours	9
"should"	4.8 hours	8

Topic	Mean	Frequency of "no idea"
Volunteer "is"	1 hour	17
"should"	3 hours	19
Cancer Funds "is"	$23,789,230	49
"should"	$37,205,380	41
Allowance "is"	$5.50	11
"should"	$5.08	8
Class Size "is"	68 students	5
"should"	35 students	4
Children's TV "is"	21 hours	20
"should"	19 hours	17
Charity "is"	$91.24	21
"should"	$134.46	25
PSA's "is"	5 hours	23
"should"	7 hours	21

From these, the following intervals were used on the final instrument:

Topic	Response Range	Interval Size
Rape	0 to 40 years	3 years (app.)
Parks	$10 million to $130 million	$10 million
Life Insurance	$20,000 to $200,000	$10,000
Army Size	300,000 to 5 million soldiers	500,000 soldiers
Child TV Viewing	7 hours to 0 hours	1/2 hour
Volunteer	0 to 24 hours	2 hours
Cancer Funds	$25 million to $300 million	$25 million
Allowance	$0.00 to $20	$2 (app.)
Class Size	15 to 150 students	15 students
Children's TV	1 to 11 hours	1 hour
Charity	$50 to $600	$50
PSA's	0 to 12 hours	1 hour

In terms of determining the formula for belief comparison, we can turn to a very simple equation. Belief comparison is operationalized below:

$$\text{Belief Comparison} = \text{Object}_{\text{should}} - \text{Object}_{\text{is}}$$

In this study two belief comparisons were made. The two measurements were taken a week apart so as to determine change in the belief comparison.

Belief comparison change is an expansion or contraction in the distance between the ideal state of an object and the real state of the object.

In this study, the change is that which takes place over a week's time. The equation again is a simple one:

$$\text{Belief Comparison Change} = (\text{Object}_{\text{should}} - \text{Object}_{\text{is}})_{\text{Time 2}} - (\text{Object}_{\text{should}} - \text{Object}_{\text{is}})_{\text{Time 1}}$$

Persuasive message is defined as a symbolic statement in which I implicitly or explicitly indicate my conception of the relationship between a person and an object or class of objects. In this study a persuasive message was operationalized as a written statement which was read by subjects. This statement consisted of a source, level of "is" and a level of "should".

All subjects were given the same sources. Each source was a mass medium and an attempt was made to hold the credibility of the sources constant for a given topic. The media were newspapers or news magazines that would likely carry an article advocating such a position. Below are the sources used for each topic:

Topic	Message Source
Rape	U.S. News & World Report
Parks	Detroit News
Life Insurance	Detroit Free Press
Army Size	New York Times
Child TV Viewing	Washington Post
Volunteer	State News
Cancer Funds	U.S. News & World Report
Allowance	Christian Science Monitor
Class Size	State News
Children's TV	Newsweek
Charity	Time Magazine
PSA's	U.S. News & World Report

The messages contained one of three levels of "should" for each topic. Below are listed the levels of "should" for each topic:

Topic	"Is"	"Should" Levels		
		1	2	3
Rape	6 years	9 years	15 years	30 years
Parks	$20 million	$30 million	$50 million	$100 million
Life Insurance	$30,000	$50,000	$80,000	$150,000
Army Size	3 million soldiers	1 million soldiers	1.5 million soldiers	2 million soldiers

Topic	"Is"	"Should" Levels		
		1	2	3
Child TV Viewing	6 hours	1 hour	2.5 hours	5 hours
Volunteers	2 hours	4 hours	8 hours	14 hours
Cancer Funds	$50 million	$75 million	$100 million	$200 million
Allowance	$5	$8	$10	$15
Class Size	30 Students	45 Students	60 Students	100 Students
Children's TV	2 hours	3 hours	5 hours	8 hours
Charity	$100	$150	$200	$400
PSA's	1 hour	4 hours	8 hours	12 hours

These levels for "should" and "is" are not analyzed separately but in combination with the receiver's beliefs as defined in the model. The equations for the message comparisons are listed below along with their appropriate hypotheses:

Hypothesis 1. Receiver's object_{is} - Message object_{is}
Hypothesis 2. Receiver's object_{should} - Message object_{is}
Hypothesis 3. Message object_{should} - Receiver's object_{is}
Hypothesis 4. Message object_{should} - Receiver's object_{should}
Hypothesis 5. Message object_{should} - Message object_{is}
Hypothesis 6. Message belief comparison - Receiver's belief comparison

Design

This secondary analysis was part of a longitudinal study. This study only deals with the first two time phases of the longitudinal study.

Eight sections of Communication 100 were used to form three experimental groups and one control group. Each experimental group received one message advocating a given position on an issue. The investigation took place April 18-23, 1973. The experimental group received two questionnaires, one on the 18th and the other on the 23rd. Subjects in the experimental groups received a message for each of the 12 topics just before filling out their Time 2 questionnaire. The control group just filled out the two questionnaires.

Results of the study follow.

RESULTS

This chapter is divided into six sections. Each section corresponds to an analysis of one of the six hypotheses. The sections contain tables of the relevant variables, their descriptive statistics (means and standard deviations), and statistical tests (correlations and significance tests).

To test the linearity of the relationships three tests were conducted: 1) an eta was computed from a one-way analysis of variance; 2) a Pearson correlation coefficient was computed; and 3) the significance of the deviation from linearity was computed.

For the first two hypotheses, nonlinear relationships were predicted in the form of an inverted U. In these situations the greatest amount of belief comparison change results from medium levels of advocacy for the given message comparison, with the lowest amount of belief comparison change resulting from the low and high levels of advocated change. We would expect in these situations that the Pearson correlation would be very small or zero. If the relationship is perfectly represented by an inverted U, we would expect the category means to look like Figure 2 and the Pearson correlation to be equal to zero.

If the relationship is not perfectly represented by an inverted U, the correlations might be very small and positive or negative. Figure 3 represents such a relationship that is positive and Figure 4 represents a relationship that is negative.

In these cases, we would expect that eta would be high. Eta measures relationships that are both linear and nonlinear. If the relationship is linear, $r_{xy} = eta_{xy}$. If the relationship is nonlinear, $r_{xy} < eta_{xy}$. The

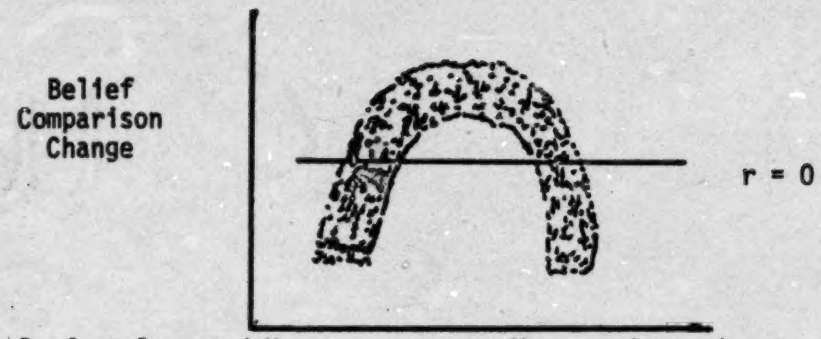

Figure 2. -- Perfect Inverted U

Figure 3. -- Positive Inverted U

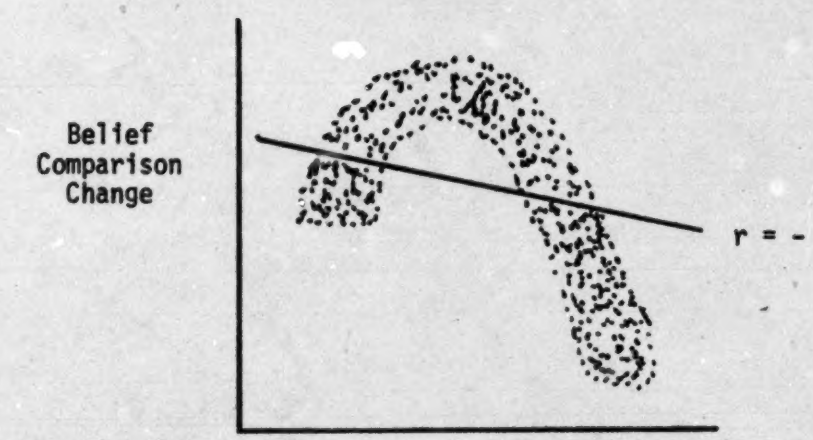

Figure 4. -- Negative Inverted U

deviation from linearity measured by the eta coefficient can be examined for significance by using the following equation:

$$F_{k-2,N-k} = \frac{(E^2 - r^2)(N - k)}{(1 - E^2)(k - 2)}$$

If the relationship is nonlinear, the F ought to be significant.

Thus, we would expect in the first two hypotheses that if the relationship is as predicted, eta ought to be high (.40 or greater = $p<.01$), the Pearson r should be relatively small (.20 or smaller = $p>.05$) and the significance of the deviation from linearity should be significant at the .05 level. By plotting category means we should be able to determine the shape.

If the relationship is positive and linear as predicted in the last four hypotheses, eta should be large (.40 or greater), the Pearson r should be large and positive and the deviation from linearity should not be significant at the .05 level.

Before turning directly to the hypotheses, it would be helpful to examine the grand means for the beliefs of "is" and "should", the belief comparison at time one and time two and the belief comparison change. Table 1 consists of these grand means and the standard deviations for belief comparison change. It should be noted that slight differences exist between grand means for computed variables done by hand and those done by computer due to missing data. This will be true for all grand means for computed variables in this section.

Hypothesis 1: There is a nonlinear relationship (inverted U) between the message comparison #1 (difference between message "is" and the receiver's "is") and belief comparison change.

This hypothesis predicts that the greatest belief comparison change will exist at the moderate level of advocacy with the smallest occuring at the lowest and highest level of advocacy of change in message comparison #1.

Table 1

Grand Means for Beliefs, Belief Comparisons and Belief Comparison Change

	Time 1			Time 2				
Topic	"Should"	"Is"	Belief Comparison	"Should"	"Is"	Belief Comparison	Belief Comparison Change	
Rape n=87	15 years	9 years	6 years	15 years	6 years	9 years	3 years	Sd = 8.98
Parks n=87	$7.5 million	$4.4 million	$3.2 million	$6.4 million	$2.4 million	$4 million	$900,000	Sd = 3.48 million
Army Size n=77	1.8 million soldiers	2.6 million soldiers	-1 million	1.4 million soldiers	2.8 million	-1.4 million	400,000 soldiers	Sd = 1.32 million
Class Size n=87	38 students	63 students	-25 students	35 students	37 students	-2 students	23 students	Sd = 29.1
Life Insurance n=82	$85,200	$48,000	$36,600	$95,800	$33,100	$62,700	$20,700	Sd = 51,600
Child TV Viewing n=87	2.5 hours	5 hours	-2.1 hours	2.9 hours	5.2 hours	-2.3 hours	-2.3 hours	Sd = 1.77
Volunteer n=87	4 hours	1 hour	2.5 hours	4.9 hours	1.7 hours	3.2 hours	.7 hours	Sd = 3.45
Cancer Funds n=87	$154 million	$79 million	$75 million	$129 million	$54 million	$75.3 million	-$396,000	Sd = 64.96 million
Allowance n=87	$6.14	$5.76	34¢	$8.43	$5.38	$3.08	$2.77	Sd = 4.51
Children's TV n=87	8.5 hours	8 hours	.4 hours	6.2 hours	4.5 hours	1.8 hours	1.6 hours	Sd = 6.96
Charity n=87	$145.12	$95.93	$56.10	$185.80	$99.40	$86.90	$29.20	Sd = 123.1
PSA's n=84	4.3 hours	2.2 hours	2.1 hours	4.9 hours	1.5 hours	3.4 hours	1.3 hours	Sd = 3.01

The grand means are presented in Table 2 for the "is" message position, the receiver's "is" belief, and the message comparison.

The results are presented in Table 3.

The eta analysis indicates that there are seven of the twelve etas that are .40 or greater. Thus, for the seven of the twelve topics there is a likelihood that a significant relationship exists.

The Pearson correlations are overwhelmingly negative. Eleven of the twelve correlations are negative and, of those, eight are significant ($p<.05$). While significant relationships exist, the likelihood of them being nonlinear is reduced by having eight significant correlations.

The test for deviation from linearity bears this out. In only four cases are there significant deviations from linearity. In one of those cases the Pearson r is -.8707. It is not likely that this relationship will bear much resemblance to the predicted one.

Figures 5-8 represent the plots of the category means for the topics in which significant deviations from linearity accrue.

The plots indicate that the curves are not linear in the predicted direction. Indeed, the curves are somewhat difficult to describe except that they vary in a negative direction. Instead of increasing, then decreasing at large values, they tend to decrease at all values. That is, when one advocates negative change, one gets positive change and vice versa. This is interesting even though it does not support the hypothesis. It would indicate that at few points does one get change in the direction desired. The ramifications of this will be pursued in the discussion section.

Consequently, the first hypothesis is not supported.

Hypothesis 2: There is a nonlinear relationship (inverted U) between the message comparison #2 (difference between receiver's "should" and message "is") and belief comparison change.

Again, the hypothesis predicts that the greatest change should accrue at medium levels of advocacy of message comparison #2 and less at low and high levels.

Table 2

Grand Means for "Is" Message, Receiver's "Is"

Belief and Message Comparison #1

Topic	Message "Is"	Receiver's "Is"	Message Comparison #1	
Rape	6 years	9 years	-3 years	Sd = 7.23
Parks	$2 million	$4.4 million	-$2.4 million	Sd = 3.12 million
Army Size	3 million soldiers	2.6 million soldiers	445,900 soldiers	Sd = 1.32 million
Class Size	30 students	63 students	-33 students	Sd = 25.6
Life Insurance	$30,000	$48,000	$18,000	Sd = 33,100
Child TV Viewing	6 hours	5.1 hours	1.3 hours	Sd = 1.39
Volunteer	2 hours	1 hour	.7 hour	Sd = 1.67
Cancer Funds	$50 million	$79 million	-$28.6 million	Sd = 51.4 million
Allowance	$5.00	$5.76	-76¢	Sd = 3.61
Children's TV	2 hours	8 hours	-6 hours	Sd = 6.59
Charity	$100	$95.59	$4.07	Sd = 89.8
PSA's	1 hour	2.2 hours	-1.2 hours	Sd = 2.14

Table 3

Results of Pearson r, Eta and Significance of

Deviation From Message Comparison #1

					Nonlinear	
Topic	r	Sig.	eta	eta^2	F	Sig.
Rape	-.143		.329	.1085	.8040	
Parks	-.3178	.002	.556	.3101	2.3243	
Army Size	-.4533	.000	.516	.2668	.7005	.05
Class Size	-.3885	.000	.464	.2155	1.0287	
Life Insurance	-.0694		.302	.0913	.8567	
Child TV Viewing	-.5085	.000	.593	.3518	1.0348	
Volunteer	-.2527	.014	.297	.0884	.9689	
Cancer Funds	-.0001		.462	.2139	2.8377	.01
Allowance	-.2200	.023	.364	.1328	1.1997	
Children's TV	-.8707	.000	.920	.8471	3.9585	.001
Charity	.0314		.255	.0655	.9661	
PSA's	-.2082	.029	.475	.2262	2.1860	.05

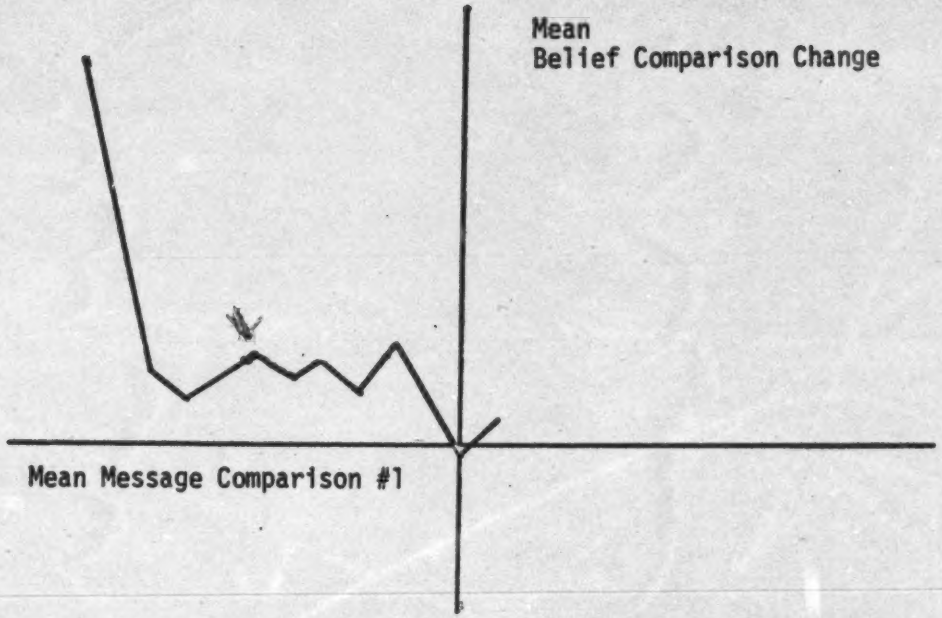

Figure 5. -- Message Comparison #1 and Belief Comparison Change: Parks

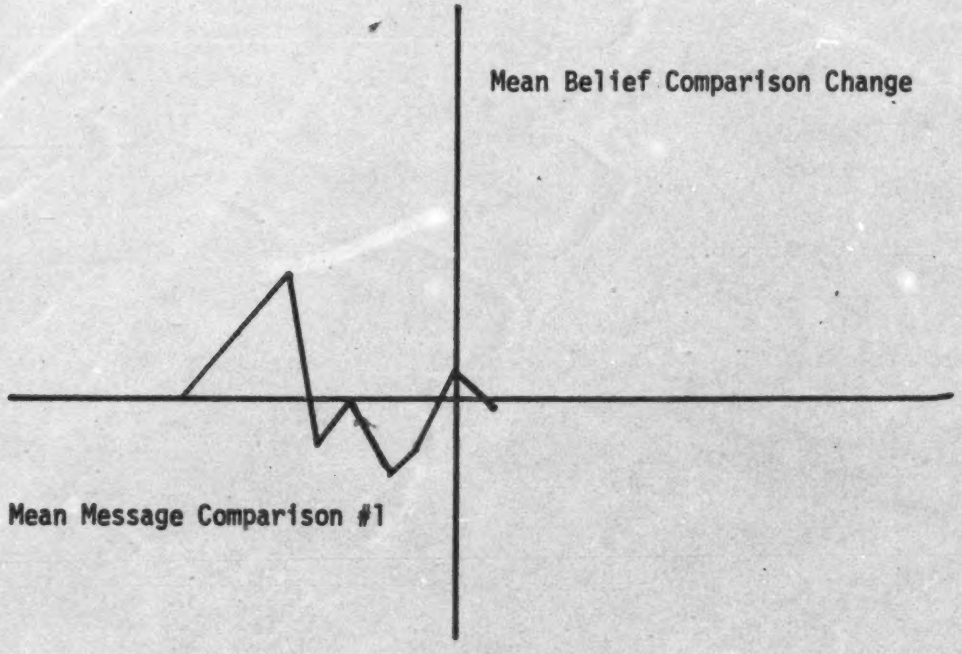

Figure 6. -- Message Comparison #1 and Belief Comparison Change: Cancer Funds

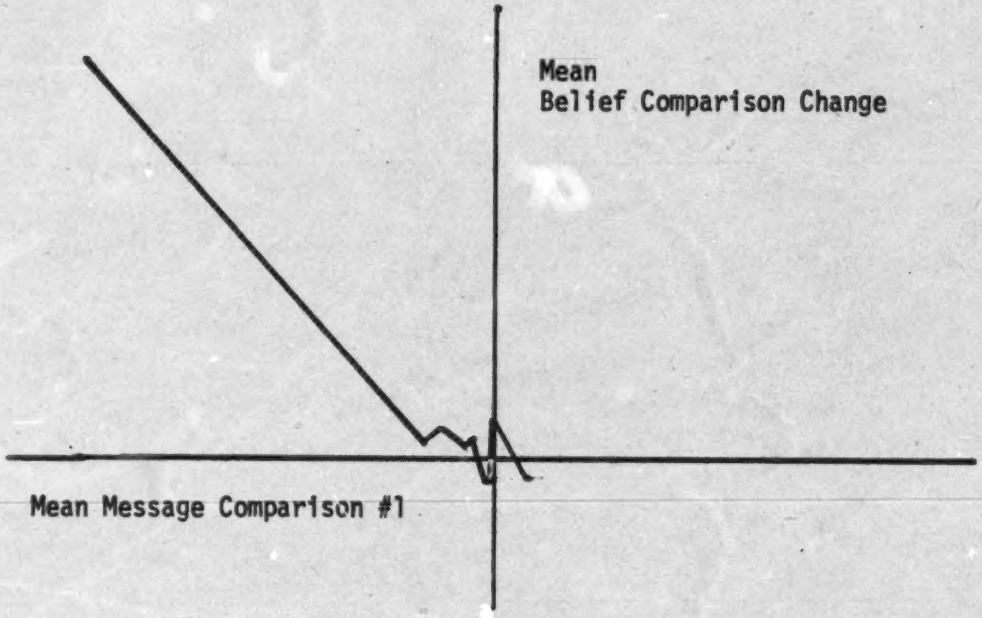

Figure 7. -- Message Comparison #1 and Belief Comparison Change: Children's TV

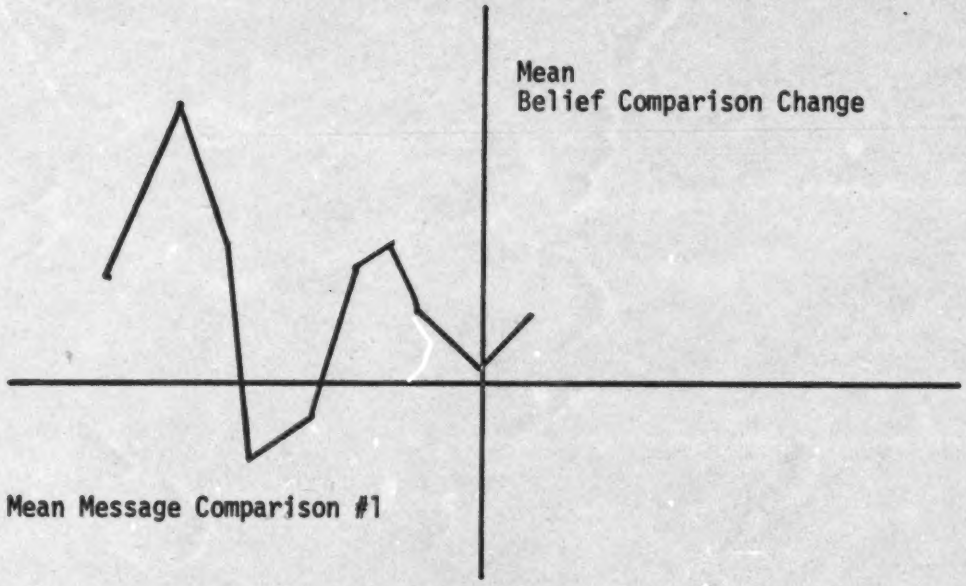

Figure 8. -- Message Comparison #1 and Belief Comparison Change: PSA's

The hypothesis was tested using an eta, Pearson r and the test for the significance of the deviations from linearity.

The grand means for receiver's "should" belief, the message "is" position and the message comparison are in Table 4.

The results of the three tests are presented in Table 5.

The table indicates that nine of twelve etas are large (.40 or higher). Again, some significant relationships are likely to be found.

The results of the Pearson r indicate all twelve of the correlations are negative and nine of the Pearson correlations are significant ($p<.05$). Again, we find strong indicants of significant relationships but because the correlations are so high the likelihood that they will be in the predicted direction decreases.

The test for significance of deviations from linearity bears this out. Only three of the twelve topics have indications of significance of deviation from linearity. Two of the deviations have relatively large correlations (-.3372 and -.4388). These deviations are not likely to be of the predicted form.

Figures 9-11 indicate the plots of the means in each of those three topics.

Again, the plots indicate no support for the predicted shape for the nonlinearity. As with Hypothesis 1, the relationship is negative. Instead of an increase in the amount of change obtained as one approached the medium levels of advocacy and a decrease afterwards, there is a decrease at most points; only Figure 10 resembles the predicted shape.

The hypothesis is not supported.

Hypothesis 3: There is a positive linear relationship between message comparison #3 (difference between message "should" and receiver "is") and belief comparison change.

The test for linearity in the hypothesis consisted of the same three tests: eta, Pearson r and the significance of the deviation from linearity.

Table 4

Grand Means for Receiver's "Should" Belief, Message "Is"

Position and Message Comparison #2

Topic	Receiver's "Should"	Message "Is"	Message Comparison #2	
Rape	15 years	6 years	9 years	Sd = 11.49
Parks	$7.5 million	$2 million	$5.5 million	Sd = 3.74
Army Size	1.8 million soldiers	3 million soldiers	-1.2 million soldiers	Sd = 1.21 million
Class Size	38 students	30 students	8 students	Sd = 25.13
Life Insurance	$85,290	$30,000	$55,290	Sd = 49,500
Child TV Viewing	2.5 hours	6 hours	-3.5 hours	Sd = 1.33
Volunteer	4 hours	2 hours	1.7 hours	Sd = 2.57
Cancer Funds	$154 million	$50 million	$104 million	Sd = 87.21 million
Allowance	$6.14	$5.00	$1.14	Sd = 5.16
Children's TV	8.5 hours	2 hours	6.5 hours	Sd = 2.94
Charity	$145.12	$100.00	$45.12	Sd = 105.9
PSA's	4.3 hours	1 hour	3.3 hours	Sd = 3.60

Table 5

Results of Pearson r, Eta and Significance of Deviation

From Linearity for Message Comparison #2

Topic	r	Sig.	eta	eta^2	Nonlinear F	Nonlinear Sig.
Rape	-.392	.000	.480	.2311	.6332	
Parks	-.1525	.08	.403	.1631	1.1364	
Army Size	-.2936	.005	.492	.2421	1.7226	
Class Size	-.3372	.001	.527	.2780	3.4580	.01
Life Insurance	-.3377	.001	.421	.1775	.5404	
Child TV Viewing	-.1802	.05	.360	.1301	.8083	
Volunteer	-.0870		.431	.1858	3.0205	.05
Cancer Funds	-.4526	.000	.537	.2890	.7426	
Allowance	-.1068		.325	.1059	.9515	
Children's TV	-.0725		.235	.0555	.4077	
Charity	-.4388	.000	.60	.3600	2.1903	.05
PSA's	-.4784	.000	.569	.3241	1.0146	

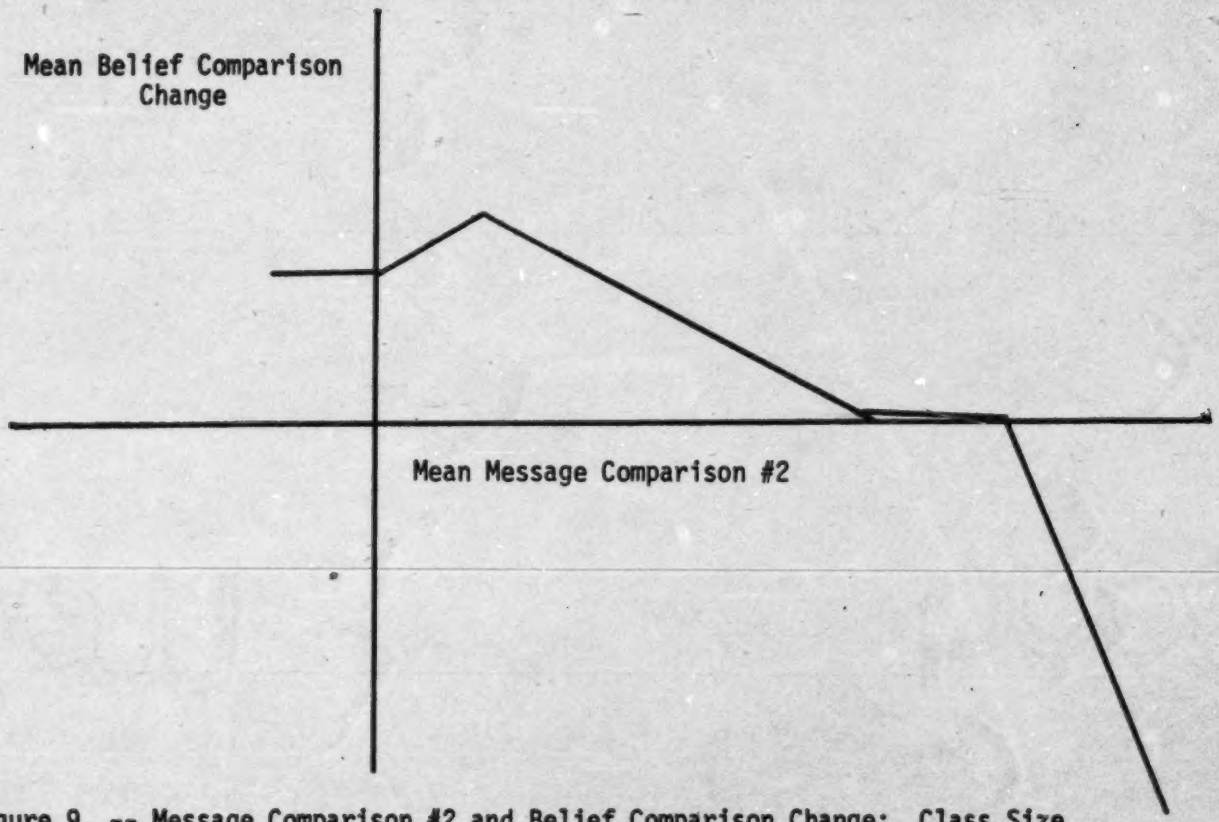

Figure 9. -- Message Comparison #2 and Belief Comparison Change: Class Size

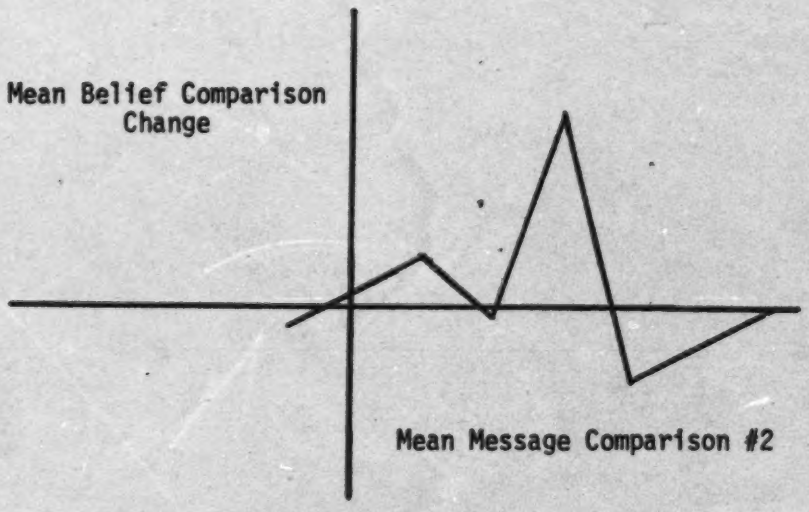

Figure 10. -- Message Comparison #2 and Belief Comparison Change: Volunteers

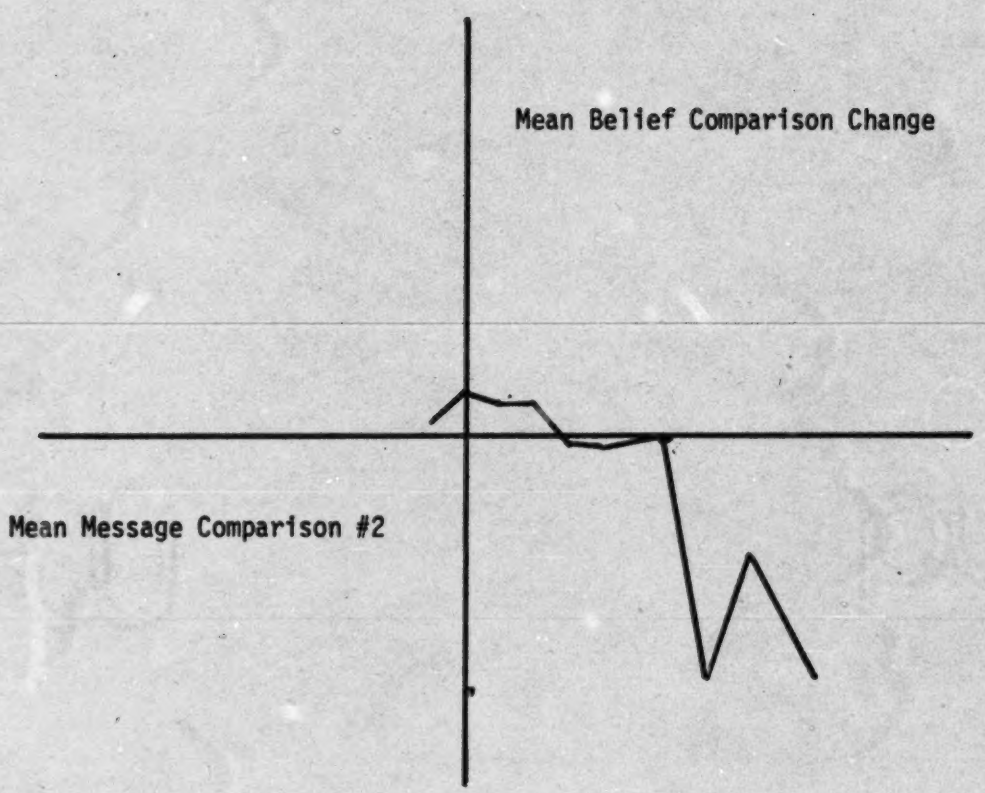

Figure 11. -- Message Comparison #2 and Belief Comparison Change: Charity

The grand means for message "should" positions, receiver "is" belief and the message comparisons are in Table 6.

The results of the three tests are presented in Table 7.

The results of the eta indicate eleven of the twelve etas were greater than .40. Again, the likelihood of significant relationships exist.

The Pearson r indicates seven of the twelve topics are positive and linear. However, of those seven positive linear relationships, only four are significant at the .05 level and one approaches significance at .07. Of the remaining five significant negative correlations, four are significant at the .05 level. Thus, slightly more than half of the topics show positive linear relationships and only four of those show significance.

When looking at the test for significance of deviations from linearity, there are only two deviations from linearity and both of them are in cases where the correlations are strongly negative (-.7913 and -.3491).

The results indicate that it is difficult to predict this relationship and that the model is unsuccessful in doing so. Only a third of the topics show strong support for the model (r is positive and significant). The other two-thirds show negative linear relationships and nonlinear relationships.

The hypothesis is not supported.

Hypothesis 4: There is a positive linear relationship between message comparison #4 (difference between message "should" and receiver "should") and belief comparison change.

Again, the hypothesis was tested using an eta, Pearson r and test for significance of the deviation from linearity.

The grand means for message "should" position, receiver "should" and the message comparison are presented in Table 8.

The results of the three tests are presented in Table 9.

The results indicate that eleven of the twelve etas are .40 or better. The etas suggest a significant relationship exists.

Table 6

Grand Means for Message "Should" Positions, Receiver "Is"

Belief and Message Comparison #3

Topic	Message "Should"	Receiver's "Is"	Message Comparison #3	
Rape	18 years	9 years	9 years	Sd = 10.43
Parks	$5.8 million	$4.4 million	$1.4 million	Sd = 4.64
Army Size	1.5 million soldiers	2.5 million soldiers	-1 million soldiers	Sd = 1.33 million
Class Size	68 students	63 students	5 students	Sd = 36.8
Life Insurance	$95,750	$48,020	$47,910	Sd = 54,300
Child TV Viewing	3 hours	5 hours	-2 hours	Sd = 2.2
Volunteer	9 hours	1 hour	8 hours	Sd = 4.3
Cancer Funds	$121 million	$79 million	$41 million	Sd = 74.13 million
Allowance	$10.83	$5.76	$5.02	Sd = 4.66
Children's TV	5.5 hours	8 hours	-2.6 hours	Sd = 6.55
Charity	$243.10	$95.93	$148.26	Sd = 134.5
PSA's	8 hours	2.2 hours	5.7 hours	Sd = 3.92

Table 7

Results of Pearson r, Eta and Significance of Deviation

From Linearity for Message Comparison #3

Topic	r	Sig.	eta	eta^2	Nonlinear F	Nonlinear Sig.
Rape	.1714	.07	.544	.2963	1.750	
Parks	.0142		.498	.2481	1.3845	
Army Size	-.3491	.001	.625	.3913	2.8767	.01
Class Size	-.2045	.032	.558	.3118	1.8770	
Life Insurance	.4824	.000	.689	.4749	1.7088	
Child TV Viewing	-.2224	.021	.456	.2082	.8271	
Volunteer	.1814	.058	.397	.1580	1.6844	
Cancer Funds	.3010	.003	.384	.1476	.4192	
Allowance	-.0536		.461	.2134	1.5164	
Children's TV	-.7913	.000	.911	.8314	6.0881	.001
Charity	.2430	.017	.512	.2625	1.6044	
PSA's	.0502		.431	.1861	1.0958	

Table 8

Grand Means for Message "Should" Position, Receiver "Should" Belief and Message Comparison #4

Topic	Message "Should"	Receiver's "Should"	Message Comparison #4	
Rape	18 years	15 years	3 years	Sd = 14.64
Parks	$5.8 million	$7.5 million	-$1.67 million	Sd = 4.86
Army Size	1.5 million soldiers	1.8 million soldiers	-300,000 soldiers	Sd = 1.35 million
Class Size	68 students	38 students	30 students	Sd = 37.38
Life Insurance	$95,750	$85,290	$11,180	Sd = 67,200
Child TV Viewing	3 hours	2.5 hours	.43 hours	Sd = 2.1
Volunteer	9 hours	4 hours	5 hours	Sd = 4.49
Cancer Funds	$121 million	$154 million	-$34 million	Sd = 105.57 million
Allowance	$10.83	$6.14	$4.69	Sd = 5.86
Children's TV	5.5 hours	8.5 hours	-3 hours	Sd = 3.68
Charity	$243.10	$145.12	$96.95	Sd = 160.50
PSA's	8 hours	4.3 hours	3.6 hours	Sd = 4.85

Table 9

Results of Pearson r, Eta and Significance of Deviation From Linearity for Message Comparison #4

Topic	r	Sig.	eta	eta^2	Nonlinear F	Nonlinear Sig.
Rape	.4921	.000	.629	.3968	..784	
Parks	.3388	.001	.655	.4299	2.1416	.05
Army Size	.3460	.001	.517	.2680	1.1785	
Class Size	.2913	.004	.614	.3778	3.3436	.01
Life Insurance	.6744	.000	.735	.5408	.6452	
Child TV Viewing	.2188	.023	.443	.1967	.7643	
Volunteer	.3158	.003	.449	.2021	1.2282	
Cancer Funds	.5828	.000	.728	.5310	1.7681	
Allowance	.1848	.048	.389	.1520	.5149	
Children's TV	.2124	.029	.484	.2352	1.6899	
Charity	.4749	.000	.649	.4213	1.6141	
PSA's	.4975	.000	.672	.4523	1.5428	

The Pearson r indicates all of the correlations are positive. Further, all twelve Pearson correlations are significant at the .05 level or higher. Thus, we do find significant relationships.

When looking at the deviation from linearity, only two topics are significantly deviant. The other ten topics provide support for the hypothesis that the relationship is positive and linear.

The hypothesis is supported; the topics provide a large amount of support for the predicted relationship.

Hypothesis 5: There is a positive linear relationship between message comparison #5 (difference between message "should" and message "is") and belief comparison change.

Linearity was determined by using an eta coefficient, Pearson r and test for the significance of deviation from linearity.

The grand means for message "should" and "is" and the message comparison are presented in Table 10.

The results of the three tests are presented in Table 11.

The results show only three etas are above .40. This would indicate that not many significant relationships exist. However, seven of the remaining etas are between .20 and .40. Thus, most etas are of medium strength.

The Pearson r indicates all twelve correlations are positive and linear. Further, ten of the correlations are significant at the .05 level. Thus, the moderate etas are as significant as the Pearson correlations indicating that significant relationships exist.

There are no significant deviations from linearity.

Thus, we find strong support for the hypothesis. All twelve topics are positive and linear; ten of the topics are significant.

Hypothesis 6: There is a positive linear relationship between message comparison #6 (difference between message belief comparison and person's belief comparison) and belief comparison change.

This hypothesis was tested using the eta coefficient, Pearson r and significance of deviation from linearity.

Table 10

Grand Means for Message "Should" and "Is"

Positions and Message Comparison #5

Topic	Message "Should"	Message "Is"	Message Comparison #5	
Rape	18 years	6 years	12 years	Sd = 8.74
Parks	$5.8 million	$ 2 million	$3.8 million	Sd = 2.87 million
Army Size	1.5 million soldiers	3 million soldiers	-1.5 million soldiers	Sd = 448,000
Class Size	68 students	30 students	38 students	Sd = 23.69
Life Insurance	$95,750	$30,000	$65,750	Sd = 43,000
Child TV Viewing	3 hours	6 hours	-3 hours	Sd = 1.7
Volunteer	9 hours	2 hours	7 hours	Sd = 4.0
Cancer Funds	$121 million	$50 million	$70 million	Sd = 53.13 million
Allowance	$10.83	$5.00	$5.83	Sd = 2.87
Children's TV	5.5 hours	2 hours	3.5 hours	Sd = 2.1
Charity	$243.10	$100.00	$143.10	Sd = 105.2
PSA's	8 hours	1 hour	7 hours	Sd = 3.67

Table 11

Results of Pearson r, Eta and Significance of Deviation

From Linearity for Message Comparison #5

Topic	r	Sig.	eta	eta^2	Nonlinear F	Nonlinear Sig.
Rape	.3429	.001	.348	.1213	..3066	
Parks	.3745	.000	.404	.1634	2.1282	
Army Size	.2544	.013	.288	.0832	.7335	
Class Size	.1021		.128	.0164	.4879	
Life Insurance	.6518	.000	.662	.4391	2.0076	
Child TV Viewing	.1234		.123	.0152	.0020	
Volunteer	.2943	.005	.296	.0877	.0862	
Cancer Funds	.4250	.000	.430	.1855	.4734	
Allowance	.1904	.043	.216	.0468	.8735	
Children's TV	.2684	.008	.272	.0743	.1865	
Charity	.2893	.005	.309	.0958	.9685	
PSA's	.1916	.040	.200	.0401	.2901	

The grand means for the message belief comparison, the reciever's belief comparison and the message comparison are presented in Table 12.

The results of the tests are presented in Table 13.

The results of the eta indicate the likelihood that a significant relationship exists. All twelve etas are greater than .40. All twelve Pearson correlations are positive and all twelve are significant at the .05 level. However, there are four significant deviations from linearity.

While all the Pearson correlations are in the predicted direction, four of them are underestimated due to significant deviations from linearity. However, in the majority of cases (two-thirds) the relationship is confirmed.

Thus, the hypothesis is supported.

In conclusion, support is found for Hypotheses 4, 5 and 6:

There is a positive linear relationship between message comparison #4 (difference between message "should" and receiver "should") and belief comparison change.

There is a positive linear relationship between message comparison #5 (difference between message "should" and message "is") and belief comparison change.

There is a positive linear relationship between message comparison #6 (difference between message belief comparison and receiver belief comparison) and belief comparison change.

Table 12

Grand Means for Message Belief Comparison, Receiver Belief Comparison and Message Comparison #6

Topic	Message "Belief Comparison"	Pearson's "Belief Comparison"	Message Comparison #6	
Rape	12 years	6 years	5 years	Sd = 13.9
Parks	$3.8 million	$3.2 million	$590,000	Sd = 3.82 million
Army Size	-1.5 million soldiers	-787,500 soldiers	-693,800 soldiers	Sd = 1.54 million
Class Size	38 students	-25 students	62 students	Sd = 37.2
Life Insurance	$65,750	$36,550	$30,120	Sd = 62,000
Child TV Viewing	-3 hours	-2 hours	1 hour	Sd = 2.3
Volunteer	6.8 hours	2.5 hours	4.4 hours	Sd = 4.33
Cancer Funds	$70.7 million	-$75 million	-$6.25 million	Sd = 90.5 million
Allowance	$5.83	34¢	$5.44	Sd = 4.63
Children's TV	3.5 hours	.4 hours	3.2 hours	Sd = 7.4
Charity	$143.10	$56.10	$86.00	Sd = 140.4
PSA's	6.9 hours	2.1 hours	4.7 hours	Sd = 4.66

Table 13

Results of Pearson r, Eta and Significance of Deviation From Linearity for Message Comparison #6

Topic	r	Sig.	eta	eta^2	Nonlinear F	Nonlinear Sig.
Rape	.5981	.000	.736	.5430	1.0745	
Parks	.6859	.000	.765	.5860	1.2760	
Army Size	.6849	.000	.809	.6550	2.3483	.05
Class Size	.5614	.000	.702	.4941	2.0329	.05
Life Insurance	.7593	.000	.841	.7083	1.3546	
Child TV Viewing	.5077	.000	.574	.3299	.4440	
Volunteer	.4260	.000	.443	.1970	.1857	
Cancer Funds	.6831	.000	.779	.6081	1.7016	
Allowance	.4084	.000	.556	.3092	.7640	
Children's TV	.8924	.000	.944	.8912	2.9068	.01
Charity	.51317	.000	.710	.5045	2.6042	.01
PSA's	.6095	.000	.736	.5424	1.2388	

DISCUSSION

This section is divided into three parts: theoretical issues, future research issues and practical application issues.

Theoretical Issues

Three of the six hypotheses derived from the model are confirmed, providing some support for the research utility of this model. Two of the three hypotheses that were not supported involve a prediction of nonlinear relationships between two of the message comparisons and belief comparison change.

In the first case, a nonlinear relationship (inverted U) was predicted between message comparison #1 (difference between what the message says the object "is" and what the person believes the object "is") and belief comparison change. Instead of inverted U relationships, negative relationships were found.

One is tempted to interpret the negative correlations as an indication that it is difficult to change a person's "is" belief. However, such a judgment is premature since the negative correlations may be largely artifactual. In some situations a large number of people believed that some object was greater than the message advocated. Their advocated change, therefore, was in a negative direction for the "is" belief. Their belief comparison change would be in a positive direction because their overall distance between "should" and "is" increased between Time 1 and Time 2. For example, the rape topic indicates that the mean "is" belief at Time 1 was 9 years and the mean "should" belief was 15 years resulting in a belief

comparison of 6 years (see Table 14). The "is" message advocated was 6 years. At Time 2 the mean "is" belief was 6 years and the mean "should" belief was 15 years resulting in a belief comparison of 9 years. The overall belief comparison change was 3 years. When correlating the message comparison #1 (the difference between message level and Time 1 "is") with belief comparison change, one gets a negative correlation because one correlates -3 years (mean message comparison #1) with 3 years (belief comparison change). This negative correlation is misleading because one actually gets the highest absolute mean change with "is" (Time 2 - Time 1 = -3 years) than with "should" (Time 2 - Time 1 = 0 years). This same analysis exists for six other topics.

In order to investigate this phenomenon for all 12 topics, it would be useful to examine the correlation between message comparison #1 (message - Time 1 "is") and amount of "is" change obtained (Time 2 "is" - Time 1 "is"). If a high correlation exists, we might assume that we are observing a negative correlation between message comparison #1 and belief comparison change that is artifactual. Table 15 indicates that correlations are extremely high (10 of 12 are greater than .80). Thus, the negative correlations found for this hypothesis are not indicative of resistance to change. Indeed, it appears that message comparison #1 is actually very effective in changing the "is" belief, and therefore the belief comparison.

In the second case, a nonlinear (inverted U) relationship was predicted between message comparison #2 (difference between receiver's "should" and message "is") and belief comparison change. Instead of a nonlinear (inverted U) relationship, a negative relationship was observed. The nonlinear relationships were not inverted U's. Instead of the greatest amount of change occurring at the moderate levels of advocacy and less change at minimal and extreme levels, we found that the greater the amount of change advocated in message comparison #2, the smaller the amount of belief comparison change obtained

Table 14

Grand Means and Standard Deviations for "Is" Change and Amount of "Is" Change Advocated

	Time 2 "Is" - Time 1 "Is"		Message "Is" - Time 1 "Is"	
	Mean	Standard Deviation	Mean	Standard Deviation
Rape	-2.56 years	7.29	-2.75 years	7.23
Parks	-$1.9 million	3.24 million	-$2.38 million	3.12 million
Army Size	280,000 Soldiers	1.5 million	446,000 Soldiers	1.3 million
Class Size	-2.5 students	27.0	-33 students	26
Life Insurance	-$15,400	35,300	-$18,000	33,000
Child TV Viewing	6 hours	19	13 hours	14
Volunteer	4 hours	1.8	.7 hours	1.7
Cancer Funds	-$25 million	58 million	-$28 million	51 million
Allowance	45¢	3.67	-76¢	3.61
Children's TV	3.7 hours	7.2	-6.1 hours	6.6
Charity	$3.01	97	$4.10	89.88
PSA's	-.7 hours	2.3	-1.2 hours	2.14

Table 15

Correlation between Amount of "Is" Change Advocated and Amount of "Is" Change Obtained

	Correlation	Significance
Rape	.9516	.000
Parks	.9092	.000
Army Size	.8907	.000
Class Size	.7574	.000
Life Insurance	.9140	.000
Child TV Viewing	.6914	.000
Volunteer	.8687	.000
Cancer Funds	.9268	.000
Allowance	.8201	.000
Children's TV	.8921	.000
Charity	.9141	.000
PSA's	.8734	.000

While this finding contradicts the model's prediction, it provides a means of correcting the model. It seems that the model underestimated how difficult it would be to change a person's belief comparison by using message comparison #2. It was assumed that it would not be difficult to persuade a person up to some extreme point at which the amount of change obtained would become less and less. Instead we found that the greatest amounts of change were obtained at low levels of advocacy, and that as one increased the levels of advocacy, the amount of change decreased immediately. Thus, the model predicted the right direction of resistance to change, but it did not accurately predict the strength of the resistance to change.

The other hypothesis that was not confirmed provided no systematic relationships. A positive linear relationship was predicted between message comparison #3 (difference between message "should" and receiver "is") and belief comparison change. Instead, positive linear relationships and negative linear relationships were observed. These results are puzzling since they provide no systematic alternative relationships. Indeed, the positive and negative linear relationships are split almost evenly (7 - 5). It may be that the topics indicating negative relationships were ones in which subjects possessed large amounts of experience. By examining this relationship in future studies that include measurement of the amount of messages and experience, we should get a better assessment of the relationship.

For the other three hypotheses, support for the model is found. Some cases are deviant in that they are either negative correlations or nonlinear. However, in the clear majority of cases, each of the hypotheses is in the predicted direction.

Thus, it would appear that with the modification of the predictions for the first two message comparisons, the model provides an adequate basis for prediction of belief comparison change.

One further test was made: in order to determine how much influence the six message comparisons have on belief comparison change, a multiple correlation analysis was done. Because some of the message comparisons were highly intercorrelated, an analysis of the beta weights of the individual message comparisons will not be presented. The computer would not force all the message comparisons, consequently, beta weights are not available for all comparisons. The results are presented in Table 16.

It would appear that the message comparisons account for a significant amount of the variance. The explained variance ranges from .2298 to .8377. It should be noted that the equations do not include variables such as amount of experience and amount of communication which should increase the amount of explained variance.

Because the message comparisons were highly intercorrelated, some could not be forced into the equation. This would suggest that not all of the message comparisons are needed. They may be so interdependent that they are virtually the same, indicating the need for further investigation whereby the model could be made more parsimonious by eliminating interdependent message comparisons.

Thus, the model does seem to have some utility and accuracy.

Future Research Issues

There are two research issues suggested by this model. First, a research project similar to this one should be undertaken, but the differences between this project and the new one are important. A measure of the amount of communication about the topic should be obtained as well as focusing on the cause of resistance to change. Also, a measure of how much experience a person has had with an object is needed. Several questions in this area would allow us to discern the variables suggested by the model that do cause resistance to change.

Table 16

Multiple Correlations Between Belief Comparison Change and Message Comparisons

	Multiple R	R^2	Sig.	# of Comparisons In Equation
Rape	.6194	.3837	.0005	6
Parks	.7402	.5480	.0005	6
Army Size	.6914	.4780	.0005	6
Class Size	.6474	.4191	.0005	5
Life Insurance	.7715	.5952	.0005	6
Child TV Viewing	.6154	.3787	.0005	5
Volunteer	.4794	.2298	.001	5
Cancer Funds	.6846	.4686	.0005	5
Allowance	.4818	.2322	.0005	4
Children's TV	.9153	.8377	.0005	6
Charity	.5917	.3501	.0005	6
PSA's	.6872	.4722	.0005	4

A second change necessary for the new research project would be that topics should be used on which subjects have a wider range of knowledge. This project focused on topics about which the individual was likely to have little information. In these topics, belief comparison change was relatively accurate. If we use topics about which a wider variance in knowledge exists, we may find a greater incidence of nonlinear relationships. Indeed, the model would predict that as we encounter people with larger amounts of information about topics we should also encounter nonlinear and negative relationships.

This new study would provide valuable information about the general applicability of the model to may persuasion situations.

A second project suggested by this study would investigate the relationship between messages, belief comparisons and behavior. It would seem valuable to investigate topics on which we can measure the influence of belief comparisons on behavioral intentions and actual behavior.

For example, we could investigate a student's decision about what class to take, a decision which may include such considerations as class size, distance from home and other classes, instructor's mean grade, time of day, etc. All of these variables can be translated into questions yielding distance estimates. After forming belief comparisons, we could ask the person to indicate satisfaction with the class and their behavioral intention to take another similar class. Hopefully, we could clarify the relationships between belief comparisons and behavioral intentions. Also, by contacting the subjects after the beginning of the next term, we could compare their decisions and the belief comparison. It would also be relatively easy to provide messages advocating changes suggested by the message comparison model allowing us to see if we change a person's belief comparison, can we also cause a certain kind of behavior, i.e., taking a class that meets the specifications of the messages.

Each of the two research projects would provide additional tests of this model. They would also further indicate the utility and generalizability of the model.

Practical Issues

There are three practical issues raised by this model and study. First, when trying to persuade others, one should not focus only on their perceptions of what something should be, or only on what they think something is, ignoring an evaluation dimension that may influence others' behavior. For example, if one wants to sell a car, instead of asking the prospective buyer how much he thinks the car should cost or how much a car does cost, one might better focus on the difference between the two figures. By getting this knowledge one could predict the success of the message on the basis of the distance.

A second practical issue is that when trying to persuade others, one should not present a message that ignores statements of "is" or "should". The persuasive message should contain comparative statements of what "is" and what "should be"; otherwise, a persuasive message with only one statement leaves the comparison up to the receiver and, since the source is generally unsure of the receiver's position, he loses control of the persuasive situation.

A third practical issue is not to ignore the influence on one's susceptibility to persuasion of previous experience or communication about an object. If one takes the approach that a receiver enters a communication situation like a blank sheet of paper, one may erroneously assume that it might be easier to obtain change than it actually will be. By recognizing the importance of the past, one may be more realistic and accurate in predicting the best strategy to use.

All of these implications can help achieve more successful persuasive attempts.

FOOTNOTES

[1]George H. Mead, Mind, Self and Society (Chicago: University of Chicago Press, 1934), p. 135.

[2]Mead, op. cit., p. 122.

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